

Sustainable Design & Development for Military Facilities

HQUSACE

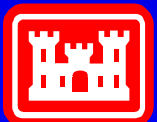


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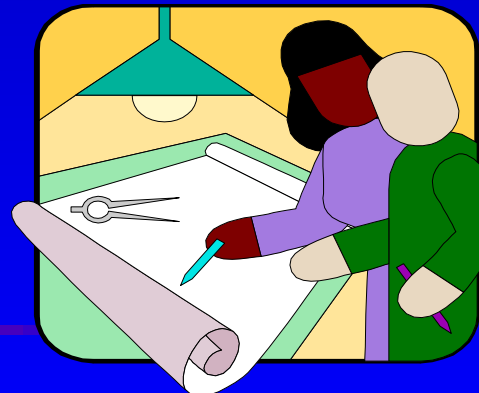


What Does Sustainable Design Mean In The Army?

- Environmentally friendly and energy efficient facilities and infrastructure;
- Holistic process;
- Meets current missions; and
- Accommodates future missions.



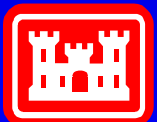
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Background



- SPiRiT is required for the rating of all Army projects;
- SPiRiT is based on LEED 2.0 Green Building Rating System™ and used by legal agreement between the Corps and USGBC;
- SPiRiT was developed to meet Army installation requirements not addressed by LEED 2.0; and
- SPiRiT incorporates the “best of the best” concepts from many similar rating systems.



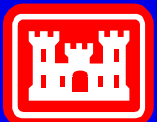
<http://www.cec.mil/SustDesign/SPiRiT.cfm>

SPIRiT Scoring

■ Sustainable Sites:	20	Green Results
■ Water Efficiency:	5	
■ Energy and Atmosphere:	28	
■ Materials and Resources:	13	
■ Indoor Environmental Quality:	17	

■ Facility Delivery Process:	7	Life- Cycle Synergy
■ Current Mission:	6	
■ Future Mission:	4	

■ TOTAL	100
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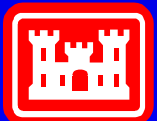
SPIRiT Rating

- **Points: 100 Possible.**
- **Score at least the following number to obtain the indicated rating:**
 - **75-100: Platinum**
 - **50-74: Gold**
 - **35-49: Silver**
 - **25-34: Bronze**
- **Goal-Bronze for now, Gold starting FY06**

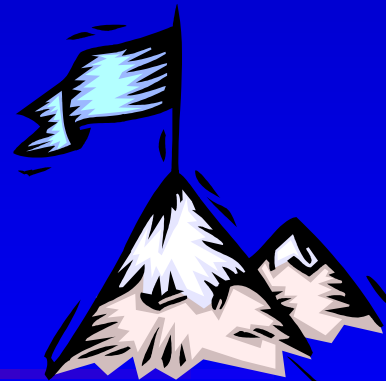


How to Implement

- Conduct planning **charrette**
 - Identify points: sure and tentative
 - Identify costs to go from Silver to Gold
- Select A/E with **experience** in SDD
 - CBD language
- Provide A/E SDD web address
 - www.cec.mil/sustdesign
- Conduct design charrette
- Refine cost estimates-3086



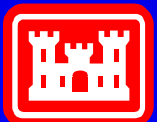
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How to Implement

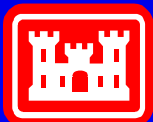


- If 3086 is complete, PA locked and unable to achieve goal revisit SPiRiT, re-estimate the project and advise HQPM via MSC.
- No validation by third party required
- District, A/E and customer to score the design against SPiRiT at every stage. Keep score card in project file
- For D/B projects RFP to have goal and identify added costs



SPIRiT Divisions & Roles

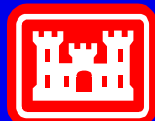
SPIRiT Divisions and Roles											
	Architect	Landscape Architect	Interior Designer	Civil Engineer	Structural Engineer	Mechanical Engineer	Electrical Engineer	Owner / Operator	Contractor/Builder	Installation Master Planner	Environmental Engineer
1.0 SUSTAINABLE SITES											
Erosion, Sedimentation, and Water Quality Control	C	C		R					C	C	C
Site Selection	C	C		C				R		R	C
Installation/Base Redevelopment	C			C				R		R	
Brownfield Redevelopment				C				R		R	C
Alternative Transportation	C			C				R		C	
Reduced Site Disturbance	R	C		C				C	R	C	C
Stormwater Management	R	C		R	C	C				C	C
Landscape and Exterior Design to Reduce Heat Islands	R	R		C	C			C	C		
Light Pollution Reduction	R		C				R	C	C		
Optimize Site Features	R	R		C				C		C	C
Facility Impact	R							C		C	C
Site Ecology		R						C		C	R
2.0 WATER EFFICIENCY											
Water Efficient Landscaping	C	R		C			C	C			C
Innovative Wastewater Technologies	C	C		C		R		C			C
Water Use Reduction	R					R		C		C	C
3.0 ENERGY AND ATMOSPHERE											
Fundamental Building Systems Commissioning	R		C		C	C	C	C	C		
Minimum Energy Performance	R		C			C	R	C			
CFC Reduction in HVAC&R Equipment	R					C					
Optimize Energy Performance	R		C			R	R	C			
Renewable Energy	C						R	C		C	C
Additional Commissioning	R			C		C	C	C	C		
Measurement and Verification	C					R	R	C	C		
Green Power							C	R		C	
Distributed Generation	C						R	C		C	C



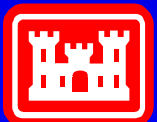
<http://www.cec.army.mil/SustDesign/ArmyProjects.cfm>

SPIRiT Point 'Tracking'

FACILITY SUMMARY POINTS		Max. Points	TEAM SCORING			Notes	Action	Status	Responsibility	Points Status
			1	2	3					
2.0 Water Efficiency (W)		5	4	3	2					
2.C1 Water Efficient Landscaping		2	2	1	2					
Use high efficiency irrigation technology, OR, use captured rain or recycled site water to reduce potable water consumption for irrigation by 50% over conventional means. (1)							Not cost effective	COMPLETE	KZFJBWSC & DSCC	0
Use only captured rain or recycled site water for an additional 50% reduction (100% total reduction) of potable water for site irrigation needs, OR, do not install permanent landscape irrigation systems. (1)							No permanent landscape irrigation is to be installed.	COMPLETE	KZFJBWSC	1
2.C2 Innovative Wastewater Technologies		1	0	0	0					0
Reduce the use of municipally provided potable water for building sewage conveyance by a minimum of 50%, OR, treat 100% of wastewater on site to tertiary standards.							Not attainable.	COMPLETE	KZFJBWSC	
2.C3 Water Use Reduction		2	2	2	0					
Employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation) after meeting Energy Policy Act (EPACT) of 1992 fixture performance requirements. (1)							Final specifications Section 15400A, Plumbing, General Purpose, will include fixtures with flow restrictors to achieve a 30% reduction in water use.	ONGOING	KZFJBWSC	1
Exceed the potable water use reduction by an additional 10% (30% total efficiency increase). (1)							Final specifications Section 15400A, Plumbing, General Purpose, will include fixtures with flow restrictors to achieve a 30% reduction in water use.	ONGOING	KZFJBWSC	1
3.0 Energy and Atmosphere (E)		28	12	13	14					
3.R1 Fundamental Building Systems Commissioning	Req'd.	-	-	-						
Implement all of the following fundamental best practice commissioning procedures.										
Engage a commissioning authority.							DSCC to answer.	TBD	DSCC	



DSCC Physical Fitness Center



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Physical Fitness Center DSCC (Columbus, OH)



Life Cycle Synergy

Facility Delivery Process

- Team / goal setting charrette / design reviews

Current Mission

- O& M manuals included in final specifications.
- Design incorporated Design Team comments on high quality indoor environment to satisfy users

Future Missions

- Very efficient layout eliminating all unnecessary building circulation / minimal building footprint



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Green Results

Sustainable Sites

- Site selected to take advantage of existing adjacent power plant, roads, parking, and water retention basin
- Landscaping to reduce thermal gain and heat islands
- Grass pavement system for required fire truck access

Water Efficiency

- No permanent irrigation system is installed
- Fixtures flow restrictors to achieve a 30% reduction

Energy and Atmosphere

- Designed to achieve TI 800-01 energy performance criteria (required DET 570 MJ/sqm/Yr -- calculated energy usage is 565.25 MJ/sqm/Yr.)
- LCA of energy recovery units, added polyisocyanurate roof insulation, and improved energy efficient windows
- Solar shading for windows / operable windows

Materials and Resources

- Site landscaping from relocated trees
- Use of recycled content steel structure, concrete masonry, and floor finishes
- Excess previous project granite pavers / wall cladding incorporated into exterior finishes

Indoor Environmental Quality (IEQ)

- Use of low / no VOC paint
- User thermal /auditory comfort, views, daylighting and systems controllability optimized for facility function

FY 2002 SHOWCASE PROJECTS

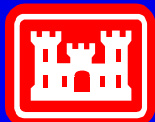
<u>PN</u>	<u>INSTALLATION</u>	<u>PROJECT</u>	<u>PA(\$000)</u>
■ 52830	Ft. Richardson	Whole Barracks Renewal	45,000
■ 30629	Ft. Gordon	Communication Facility	11,000
■ 52954	Camp Jackson	General Instruction Building	6,100
■ 2298	Ft. Polk	Education Center	10,800
■ 43707	Ft. Monmouth	Military Prep School	20,000
■ 41746	Ft. Lewis	Whole Barracks Renewal	48,000



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FY 2003 SHOWCASE PROJECTS

<u>PN</u>	<u>INSTALLATION</u>	<u>PROJECT</u>	<u>PA(\$000)</u>
■ 048707	Ft. Benning	Barracks Complex	45,000
■ 041631	Ft. Bragg	Barracks, Armistead	50,000
■ 048674	Ft. Campbell	Barracks, Range Road	49,000
■ 052068	Schofield Bks.	Barracks, Foote Ave-C	42,000
■ 057341	Ft. Wainright	Mission Support Training	25,000
■ 55837	Ft. Detrick	Community Support Center	2,850



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FY 2004 SHOWCASE PROJECTS

58604	<i>Ft. Huachuca, AFH</i>
57785	<i>Ft. Wainright, AFH</i>
58677	<i>Ft Knox, AFH</i>
34082	<i>White Sands, AFH</i>
51112	<i>Ft. Campbell Barracks</i>
34048	<i>Schofield Barracks, Info Sys Facility</i>
53321	<i>Ft. Gilem, Special Purpose Facility</i>
54214	<i>Camp Casey, Barracks</i>
53513	<i>Ft. Richardson, Barracks</i>
44794	<i>Ft. Lewis, Barracks</i>
44122	<i>Ft. Drum, Barracks</i>
23652	<i>Ft. Hood, Barracks</i>



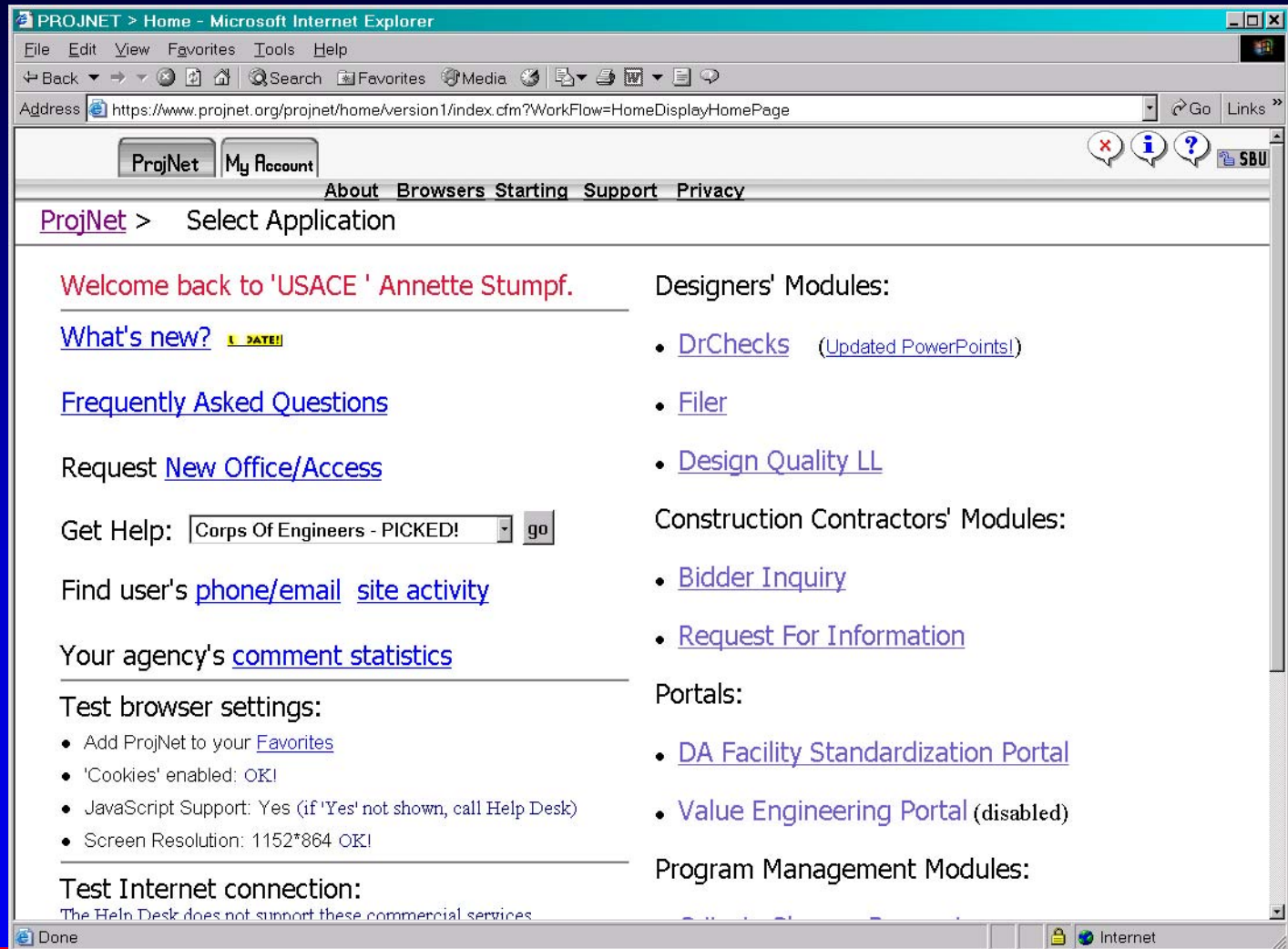
FY 2005 SHOWCASE PROJECTS

<u>PN</u>	<u>INSTALLATION</u>	<u>PROJECT</u>
■ 57069	Ft. Huachuca	AFH
■ 57073	Ft Richardson	AFH
■ 57070	White Sands	AFH
■ 57041	Yuma PG	AFH
■ 59074	Camp Casey	Senior Leaders Quarters
■ 52263	Schofield Barracks	WBR phase 3B
■ 51174	Ft Leavenworth	CGSC
■ 33409	Ft Drum	WSAAF, PH 2
■ 45190	Ft Irwin	Command and Control Facility
■ 58799	Ft Campbell	CSG Barracks
■ 36403	Ft. Campbell	5 th SFG Barracks
■ 44795	Ft. Lewis	Barracks
■ 56449	Ft. Leavenworth	Lewis and Clark Ins. Facility
■ 53608	Ft. Carson	Barracks



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Use DrChecks for SDD Reviews



US Army Corps of Engineers <http://www.projnet.org/>

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Project: **Demo Project for System Support Staff** Review: **Final Review** scheduled 26-Aug-02 to 26-Aug-03.
On-Line documents available via. remote **server**.

1 Select Source:

1 Find What: **(picked.)** Searching for Comments

2 Select Search Criteria:

2.a User: (opt.) Anyone's comments.

2.b Project: (opt.) Project not considered.

2.c Design Discipline: (opt.)

2.d Keyword: (opt.)

2.e Max. Comments: (reqd.) ☐ 25 ☒ 50 ☐ 75 ☐ 100

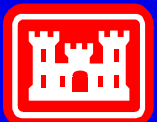
2.f Sort By: (reqd.) ☒ Most Recent ☐ Comment ID ☐ Spec ☐ Author ☐ Sheet/Detail/Reviewer ☐ Code Reference

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Project: **Demo Project for System Support Staff** Review: **Final Review** scheduled 26-Aug-02 to 26-Aug-03.
On-Line documents available via. remote **server**.

45 comments returned.

Paste Comment (ID 165040) text and discipline to current project. ☐ No ☐ Yes

a. Discipline:	Architectural	b. DocType:	Planning Report
c. Spec:	n/a	d. Sheet/Detail:	n/a / n/a
e. Code Ref:	SPiRiT 1.C1.2	f. Doc Ref:	n/a
g. Comment:	AEC Aberdeen project site is close enough the the bus line to qualify for this credit. Select site based on functional adjacencies/relationships and land use compatibility: 1. Select sites close to existing roads and utilities or use an existing structure to minimize the need for new infrastructure. 2. Select site in area of high density. 3. Site facilities based on the strength of their relationships to other facilities/land-uses to limit travel distances. The stronger the relationship/functional interaction, the closer the distance between two facilities. 4. Select for distance to installation/base transit systems and access to pedestrian ways and bike paths. 5. Select for development previously used or developed suitable and available sites. (SPiRiTcheck) (imported from DrChecks word template)		
h. Original By:	07-Jan-03 by Annette Stumpf Annette.L.Stumpf@erdc.usace.army.mil (217-352-6511). (THIS DATA DOES NOT COPY)		
i. Revised On:	07-Jan-03 (THIS DATA DOES NOT COPY)		

Paste Comment (ID 165041) text and discipline to current project. ☐ No ☐ Yes

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